

EPA Comments and Responses on Draft (dated June 18, 2020) and Revised (dated December 18, 2020) Pre-Design Investigation Work Plan

Arkema Project Area

EPA Response dated January 28, 2021

The United States Environmental Protection Agency (EPA) has reviewed the Final Pre-Design Investigation Work Plan (PDI WP) for the Arkema Project Area. The Final PDI WP was prepared by Integral Consulting, Inc. (Integral) and Dalton Olmsted Fuglevand (DOF) on behalf of Legacy Site Services, LLC (LSS; agent for Arkema Inc.) and dated December 18, 2020. The PDI WP is a deliverable prepared for the Arkema Project Area of the River Mile 7 West Project Area under the Administrative Settlement Agreement and Order on Consent for Removal Action, CERCLA Docket No. 10-2020-0054 (ASAOC), executed between Arkema Inc./ Bayer CropScience and EPA.

EPA finds the revisions to the Final PDI WP to be generally responsive to EPA's comments dated September 14, 2020 and conditionally approves the document. EPA requests LSS consider the text below as it implements the Final PDI WP or in other phases of the project. Where appropriate, EPA has referenced its November 9 and 17, 2020 comments on LSS' October 27, 2020 response to comments (RTC) table.

EPA Comments on the Revised PDI WP

Unless otherwise noted, LSS responses to EPA's comments on the Draft PDI WP are acceptable. However, clarification is provided below for the following comments: PDI WP General Comment 5; PDI WP Specific Comments 19b, 22, 24, 25a, 36, 39b, 40, 46, 49, 51, 57, 63, 71; FSP Specific Comments 15b, and 21; and QAPP Specific Comments 2b, 5, and 10.

EPA PDI WP General Comment 5 (September 14, 2020)

Appendix G: The proposed approach of collecting 2,3,4,7,8-PeCDF (PeCDF) data to represent all PCDD/Fs at the RM 7W area is inconsistent with the ROD and should be removed from the PDI WP. The ROD requires SMAs to be delineated based on characterization of all Table 21 contaminants. Additionally, PCDD/F analysis techniques have improved substantially since most of the Portland Harbor Remedial Investigation and Feasibility Study data was collected and therefore the correlations between PeCDF and the other PCDD/Fs presented in Appendix G are not likely to be representative of current conditions and need to be evaluated using RD data. EPA acknowledges the discrepancy identified between FS Appendix B and Appendix J; however, that is not an acceptable reason to deviate from ROD requirements to characterize all Table 21 contaminants.

LSS Response (October 27, 2020)

All Table 21 contaminants will be addressed by the revised sediment sampling program. See also response to General Comment 1. Thank you for acknowledging the discrepancy between FS Appendix B and Appendix J. The correlations between PeCDF and the other PCDD/Fs presented in Appendix G will be reevaluated using RD data that establish current conditions.

EPA Response (January 28, 2021)

EPA appreciates the addition of all Table 21 contaminants to the revised sediment sampling program for the Arkema Project Area. The response to EPA's comment is acceptable; however, the text added to the PDI WP and Appendix G in response to this comment requires clarification. The EPA comment did not state that there is a discrepancy in the HxCDF risk values between Appendix B and Appendix J of the Portland Harbor FS. Appendix B Table B2-1 is not presenting risk values (i.e., is not the same as 1 in 1,000 cancer risk or similar value) but rather is calculating what percent each dioxin/furan congener contributes to the overall dioxin/furan risk in a particular tissue composite sample. Appendix J provides the residual risk values in sediment calculated for the different remedial alternatives based on the RAO 2 sediment PRGs. Comparing the percentage risk contribution for biota tissue with sediment risk estimates is not a direct comparison and the text stating that there is a discrepancy in the "HxCDF risk value" is inaccurate. EPA disagrees with the LSS proposal to "to define the area of HxCDF PTW in design using the focused COCs and other additional contaminants if the Phase 1 PDI data show a distribution of HxCDF PTW similar to previous data." No change to the Final PDI WP is needed; however, future documents should not refer to any discrepancy in the HxCDF risk value between Appendix B and Appendix J of the Portland Harbor FS. LSS should also keep in mind that all areas with sediment concentrations exceeding HxCDF PTW thresholds will need to be remediated consistent with the ROD.

EPA PDI WP Specific Comment 19, Part b (September 14, 2020)

As part of the upland RI, LSS conducted an ecological risk assessment for terrestrial receptors along the river bank. This risk assessment concluded that there is unacceptable risk to burrowing mammals from river bank contaminants. This information should also be included in Section 2.7 of the PDI WP.

LSS Response (October 27, 2020)

Note that an upland Level II screening ecological risk assessment was conducted at the Arkema Site; A Level III ecological risk assessment was not conducted. The Level II screening risk assessment did not provide conclusions related to unacceptable risk to burrowing mammals (please see the Arkema upland Level II Screening Ecological Risk Assessment dated January 19, 2009). Section 2.7 will be revised to include a more comprehensive summary of historical soil sample data along the riverbank collected as part of the Level II screening ecological risk assessment.

EPA Response (November 17, 2020)

EPA understands that DEQ modified the Level II Screening Ecological Risk Assessment; therefore, the summary should be based on the Level II Screening Ecological Risk Assessment with DEQ's final modifications.

EPA Response (January 28, 2021)

The EPA November 17, 2020 response remains unaddressed in the work plan. The conclusions about ecological risk presented in the Integral 2009b report referenced were supersede by Integral's June 17, 2011 *Addendum to January 16, 2009 Arkema Upland Level II ERA Ecological Soil Screening Level Values for PCDDs and PCDFs*. The Addendum states "...depending on the receptor and the toxicity endpoint, soil SLVs for the 2,3,7,8-TCDD congener range from 1.6×10^{-6} mg/kg dw soil to 7.2×10^{-5} mg/kg dw soil. Based on UCL90 concentrations for riverbank soils only total TCDD TEQ for small

mammals is identified as a chemical of potential ecological concern. Comparisons with 10X LOAEL SLVs indicated that sample locations (RBC 3, RBC 9 and RBC 11) may be of concern in a hotspot evaluation.” Further, agreement between DEQ/LLS are captured in DEQ’s 2017 comments on the Feasibility Study Work Plan (Specific Comment 6). In all future submittals, please ensure the most recent information on the ecological risk assessment is provided.

EPA PDI WP Specific Comment 22 (September 14, 2020)

Provide additional explanation regarding the method(s) planned to be used to evaluate the sediments under the docks. No sampling is proposed at this time. The sediment may be disturbed during dock removal and, therefore, may need to be characterized.

LSS Response (October 27, 2020)

Sediment characterization will be performed in dredged and undredged areas immediately adjacent to docks, providing data on less than 150-ft centers near docks. Underdock sediment sampling is not proposed due to safety concerns and is not expected to differ significantly from adjacent sediment just outside dock footprint.

EPA Response (January 28, 2021)

As stated in EPA’s November 9, 2020 email, the explanation provided in the LSS response was to be added to the revised Final PDI WP. Please ensure this explanation is included in the Phase 1 Data Analysis and Review and subsequent documents as appropriate.

EPA PDI WP Specific Comment 24 (September 14, 2020)

Suggest refinement of the following statements on non-aqueous phase liquid (NAPL): “During previous investigations, sheens, blebs, and globules were observed in selected boreholes, which is consistent with a typical navigable river in an industrialized area. These latter sheens are not related to past industrial practices at the Arkema site and because they are not related to a NAPL source are not considered indicators of PTW in the Arkema Project Area.” The area of NAPL observations in the Arkema Project Area is collocated with the area of chlorobenzene PTW exceedances and dismissing the NAPL as “consistent with a typical navigable river in an industrialized area” is not supported by the data presentation so this sentence should be removed or revised to providing supporting information. PTW delineation via field observations and laboratory testing is needed in the PDI to determine PTW areas for remediation.

LSS Response (October 27, 2020)

The NAPL statements will be clarified in the text. LSS agrees that PTW delineation via field observations and laboratory testing is needed in the PDI to determine PTW areas for remediation. LSS presented a revised approach to NAPL and PTW delineation during a call with EPA on September 30, and the tentative resolution and agreements were documented in an email to EPA on October 2. The work plan will be revised to present the revised approach to addressing PTW delineation. LSS agrees that chlorobenzene PTW in sediment in the area of Docks 1 and 2 exceeds the EPA ROD chlorobenzene PTW criteria and further delineation of this area is not required, except to define the bottom of the chlorobenzene PTW.

EPA Response (January 28, 2021)

The clarifying text added to the Final PDI WP does not support the conclusion that observations in select boreholes of petroleum-related sheens, blebs, and globules is “consistent with a typical navigable river in an industrialized area” and should not be repeated in future documents unless further substantiation is provided. Regardless of origin, LSS should note that all PTW within the Arkema Project Area needs to be remediated per the ASAOC.

EPA PDI WP Specific Comment 25a (September 14, 2020)

The text states “Because of basic physical and engineering constraints, there will be some soil and groundwater beneath the Arkema Project Area river bank that cannot be remediated by either the groundwater SCMs [source control measures] or sediment remedial measures.” This sentence is not clear and claims that an area cannot be remediated without providing a technical basis for that assertion. Please remove or revise by providing a technical basis for why the area cannot be remediated.

LSS Response (October 27, 2020)

Clarification will be added to the work plan detailing potential physical and engineering constraints for remediating the riverbank area due to the presence of the groundwater barrier wall.

EPA Response (January 28, 2021)

The clarifying text added to the Final PDI WP does not provide adequate technical justification for stating that this area cannot be remediated. EPA disagrees that this area cannot be practicably remediated and leaving this area unremediated will greatly impact the achievement of RAOs in the project areas. Engineering controls to stabilize the wall during remediation and amended caps are a few potential options for consideration during remedial design.

EPA PDI WP Specific Comment 36 (September 14, 2020)

Note that all river bank samples should be analyzed for RBG Table 1 contaminants (see the specific comment on Section 3.2.1). The text states that: “Select soil samples will be analyzed for DDx, PCB congeners, dioxins and furans, and asbestos in accordance with the river bank soil sample analysis decision tree in Figure 3-2d.” At a minimum, surface samples need to be analyzed for RBG Table 1 contaminants, and EPA recommends analysis of subsurface samples to prevent delays in design due to data gaps.

LSS Response (October 27, 2020)

The work plan will be revised to reflect analysis of the full Table 1 for riverbank surface samples where historical data are not available for that list, and acknowledge the need for characterization at depth as part of the design.

EPA Response (January 28, 2021)

The response and associated revisions to the PDI WP are acceptable. However, EPA requests that a CSM-based rationale be provided in the Phase 1 Data Analysis and Review and/or Draft Phase 2 Scope of Work Memorandum for not analyzing subsurface samples consistent with Riverbank Guidance Table 1.

EPA PDI WP Specific Comment 39b (September 14, 2020)

EPA does not agree with the positive identification of NAPL only based on laboratory testing. Revise the text to acknowledge that positive shake tests will be considered to represent the presence of NAPL in the core. This is consistent with NAPL identification procedures used at other sediment superfund sites and less conservative than the approach used at the Gasco Project Area. EPA also notes that the centrifugation method provides information on the mobility of free product and a lack of mobile NAPL does not indicate the absence of NAPL in the sediments. The ROD does not differentiate between mobile and residual NAPL and the presence of any NAPL is included in the ROD's definition of PTW-NAPL.

LSS Response (October 27, 2020)

A revised approach for defining NAPL and PTW will be presented in the revised work plan. The revised approach focuses on the use of field screening and laboratory testing to define NAPL, if present. See also response to work plan Comment S39a.

EPA Response (January 28, 2021)

The proposed multiple lines of evidence approach for identifying NAPL relies on the laboratory being able to extract NAPL supernatant from NAPL-impacted sediment samples via centrifugation as the deciding factor and the Final PDIWP states that: "If NAPL is not found in the supernatant, NAPL will not be considered in the design process." This is inconsistent with NAPL evaluations at other sediment superfund sites as well as NAPL identification techniques being used at other Portland Harbor project areas. Positive identification of NAPL based on visual observations and shake tests should be used to define the extent of NAPL within the Arkema Project Area. Alternatively, UV fluorescence photography may be used to identify the presence/absence of NAPL, consistent with work done at the Gasco Project Area. The NAPL centrifuge tests are designed to determine free product mobility and not to determine the presence/absence of NAPL; therefore, the centrifuge test results may be used to evaluate mobility.

EPA PDI WP Specific Comment 40 (September 14, 2020)

Clarify whether LSS plans to delineate the extent of NAPL impacts in Phase 2. The current study seems to be evaluating the presence/absence of NAPL in sediments and does not address delineating the extent of NAPL impacts. The rationale for limiting chemical analysis of NAPL to diesel range organics, gasoline range organics, and VOCs must be provided. Specifically address the exclusion of PAHs from this analysis.

LSS Response (October 27, 2020)

Any NAPL impacts will be initially identified during Phase 1. If additional supplemental NAPL delineation is necessary based on Phase I delineation results, this will be supplemented during PDI Phase 2 sampling. LSS will include PAH analysis in the NAPL analytical scheme.

EPA Response (January 28, 2021)

As stated in EPA's November 9, 2020 email, the explanation that additional supplemental NAPL delineation will be conducted during PDI Phase 2 sampling, as necessary, was to be added to the Final PDI WP. The Final PDI WP was not revised to include the text; however, EPA acknowledges the intent in this conditional approval. Further, EPA acknowledges that PAH analysis was added to the sampling scheme.

EPA PDI WP Specific Comment 46 (September 14, 2020)

Clarify in the text whether additional bathymetry data is needed for improved coverage in nearshore areas for RD and when this data will be collected. Text in Section 3.4.1 indicates there is a potential data gap in nearshore areas for the existing bathymetry.

LSS Response (October 27, 2020)

Clarification will be added to the work plan text.

EPA Response (January 28, 2021)

Clarification was not added per the LSS response. The requested clarification should be added to future documents such as the Draft Phase 2 Scope of Work Memorandum.

EPA PDI WP Specific Comment 49 (September 14, 2020)

The proposed groundwater analytical suite must be more inclusive of all relevant Arkema contaminants and contaminants detected in top of bank monitoring wells. Revise the proposed analytical suite to include all Table 17 COCs with groundwater CULs (including chlorobenzene and chromium), Table 21 focused COCs, chloroform, and chloride. As described, the current analytical suite is insufficient based on the CSM.

LSS Response (October 27, 2020)

The work plan will be updated to include the groundwater suite noted in this comment.

EPA Response (January 28, 2021)

The Final PDI WP includes all requested analytes for groundwater, TZW, and porewater sampling except dioxins/furans. EPA acknowledges that there are no groundwater CULs for dioxins/furans. However, TCDD TEQ exceeding the DEQ chronic aquatic life hot spot screening criteria have been observed in upland groundwater samples and dioxins/furans have been detected in TZW samples in the Downstream Reach of Arkema. Therefore, the Final PDI WP should include dioxins/furans in the analytical suite for groundwater, porewater, and TZW samples. This information will be used in cap design modeling to ensure that a cap protective of contaminants with groundwater CULs will also be protective of dissolved dioxin/furan concentrations and that the existing dioxin/furan contamination will not prematurely exhaust the sorption capacity of the cap before its design life. It is anticipated that a threshold for aqueous dioxin/furan concentrations will be needed to demonstrate the efficacy of a cap via modeling and an aqueous concentration derived from the sediment/riverbank soil cleanup levels for dioxins/furans using equilibrium partitioning may be used for the purpose of cap design modeling. The appropriate cap design threshold for dioxins/furans can be determined in consultation with EPA at a later stage during RD. Additionally, pH analysis should also be included for groundwater, porewater, and TZW samples.

EPA PDI WP Specific Comment 51 (September 14, 2020)

Analysis of seepage meter and Trident Probe samples needs to be expanded to include ROD Table 17 COCs with groundwater CULs, ROD Table 21 focused COCs, and chlorobenzene. Without

concentrations for ROD Table 17 COCs it cannot be verified that the cap design is sufficient to achieve CULs.

LSS Response (October 27, 2020)

The seepage meter and Trident Probe samples will be analyzed for groundwater COCs listed in Tables 17 and 21 of the Portland Harbor ROD. In addition, chloroform and chloride will be analyzed in these samples.

EPA Response (January 28, 2021)

See EPA response to Specific Comment 49 above regarding dioxin/furan analysis.

EPA PDI WP Specific Comment 57 (September 14, 2020)

In order to minimize the number of field change requests, provide a contingency plan for cases where field conditions prevent execution of the sampling program as planned for the following: surface sediment sampling, sonic drilling, mud-rotary drilling, vibracore sampling, hand auger boreholes, and porewater sampling. Include the number of sampling attempts before the location will be abandoned and parameters for moving to a new location (e.g. radius from original location, conditions which necessitate total abandonment). Clarify whether less than 3 surface sediment subsamples will be accepted in locations with poor recovery.

LSS Response (October 27, 2020)

This clarification will be added to the work plan. LSS agrees that this clarification will streamline the field program and minimize the number of field change requests.

EPA Response (January 28, 2021)

The response to this comment and associated Final PDI WP revisions are acceptable. However, LSS should note that EPA allows a radius of up to 50-ft from the target location for additional surface sediment sampling attempts and subsurface sediment cores. Consistent with other PDIs at Portland Harbor, a 25-ft radius from the target location is acceptable for surface sediment and riverbank hand auger samples. Additional surface sediment attempts can be made within a 50-ft radius if a sample meeting acceptance criterion is not collected from within a 25-ft radius of the target location. For subsurface sediment cores, a 50-ft radius from the target location is acceptable for additional attempts before abandoning a station.

EPA PDI WP Specific Comment 63 (September 14, 2020)

Seepage meter sampling locations are limited to the area downstream of the barrier wall. It would be beneficial to measure seepage flux in capping areas identified by the ROD to collect data for cap designs; however, it is acceptable to defer this to a later stage. Similarly, the proposed scope of porewater sampling would be insufficient for designing caps and additional porewater data will be needed at a later stage.

LSS Response (October 27, 2020)

Comment noted. The seepage meter program will be expanded to include the GS Roofing and Lots 1 and 2 areas (see response to work plan Comment S9 for additional details).

EPA Response (January 28, 2021)

EPA appreciates that the seepage meter program was expanded to include additional locations within the project area. Based on the groundwater contours it would be beneficial to add a seepage meter station just downstream of PZ-1 or move one of the proposed stations closer to Dock 2. This may be considered after evaluating the groundwater data set from riverbank monitoring wells as indicated in Section 3.5.3.3. EPA also requests that refinements to seepage meter locations based on the riverbank monitoring well data are provided for EPA approval prior to deployment of seepage meters in the Phase 1 Data Analysis and Review and/or Draft Phase 2 Scope of Work Memorandum. Additionally, the proposed scope of porewater sampling was not revised as requested. EPA expects that additional porewater sampling, if needed, will be considered during development of the Phase 2 Scope of Work Memorandum.

EPA PDI WP Specific Comment 71 (September 14, 2020)

It is unclear how the term “target COC” is being used in these figures. Clarify in these figures which COCs would be analyzed before the step of “analyze sample for remainder of target COCs”.

LSS Response (October 27, 2020)

The “target COC” is referring to the COC(s) that may exceed the RALs or PTW thresholds based on the historical data set. The purpose of initially analyzing for target COCs is to streamline the process for reaching the goal of analyzing two consecutive sediment samples with results below the RALs or PTW thresholds. Clarification will be added to these flow chart figures in the work plan.

EPA Response (January 28, 2021)

As stated in EPA’s November 9, 2020 email, EPA expected that a detailed discussion of target COCs would be added to the revised PDI WP. The expectation included identification of target COCs in different sampling areas. The current approach seems to be focused on delineating depth of contamination for dredge prisms and it is unclear if it is expected to collect the type of information required if the selected technology is capping and not dredging, especially considering the limited scope of porewater sampling. Since the technology assignments have not been determined yet, additional clarification on the sufficiency of this approach may be required in future documents. Additionally, the use of target COCs is acceptable for streamlining the analysis of core sample intervals but cannot be used for identifying area-specific driver COCs (i.e. all ROD Table 21 contaminants and Table 17 contaminants, as applicable, need to be considered in design).

EPA FSP Specific Comment 15b (September 14, 2020)

As stated in the PDI WP specific comment on Section 3.3.1, a positive shake test will be considered PTW NAPL and centrifuge testing will be used to inform physical parameters and chemistry of NAPL. Make the Section 4.4.1.3 text consistent with the Section 3.3.1 text.

LSS Response (October 27, 2020)

Text in this section of the work plan will be made consistent with Section 3.3.1 of the work plan. Also, see response to work plan Comment S39a.

EPA Response (January 28, 2021)

See EPA response to PDI WP Specific Comment 39b above regarding NAPL testing.

EPA FSP Specific Comment 21 (September 14, 2020)

Porewater samples and the transition zone water samples (discussed in Section 4.6.3) should be analyzed for all ROD Table 17 COCs with groundwater CULs, ROD Table 21 focused COCs, and chlorobenzene.

LSS Response (October 27, 2020)

Please see the response to work plan Comment S51.

EPA Response (January 28, 2021)

See EPA response to PDI WP Specific Comment 49 above regarding dioxin/furan analysis.

EPA QAPP Specific Comment 2b (September 14, 2020)

The Project/QA Manager is shown here and on the Organization Chart as Eron Dodak of Integral. The PM can and should have quality related responsibilities but should not be the QA Manager. The QA Manager should be independent from the unit generating data and ideally report to top management to be independent and unbiased so that the objectivity and goals of the quality management system are maintained. List the QA Manager separately and describe their separate responsibilities.

LSS Response (October 27, 2020)

An independent Project QA officer will be assigned with clear roles and responsibilities identified in this section of the QAPP.

EPA Response (January 28, 2021)

The response and associated revisions to the QAPP are acceptable. However, the newly assigned QA Manager needs to be included on the QAPP signature page. Please provide an updated signature page.

EPA QAPP Specific Comment 5 (September 14, 2020)

The text indicates that DOC samples will be analyzed using method USEPA-9060A but the associated Table B-4 shows sample method APHA SM5310B. Update the text or table accordingly to clarify the procedure to be used for DOC.

LSS Response (October 27, 2020)

Table B-4 will be updated to report the DOC method as EPA 9060A.

EPA Response (January 28, 2021)

The response and associated revisions to the QAPP are acceptable. However, note DOC is now missing from Table B-4. Please ensure samples are analyzed for DOC by EPA Method 9060A despite the omission.

EPA QAPP Specific Comment 10 (September 14, 2020)

The first full paragraph states “MRL goals for this project will be determined prior to initiation of field activities”. The QAPP should document the method reporting limit (MRL) goals to evaluate the ability of

the selected methods to achieve these goals. Clarify this statement and indicate why the MRLs are not included in the QAPP tables.

LSS Response (October 27, 2020)

The QAPP tables will be updated to include the current laboratory MDLs and MRLs.

EPA Response (January 28, 2021)

Revisions made to the QAPP in response to this comment are not acceptable. Tables B-5 and B-6 only list the laboratory MDL and LOQs. If there are no applicable project action limits (PALs) a footnote needs to be added to the tables to justify their absence. This footnote must correlate to the use of the data. The tables should include information such as reporting/quantitation limit goals to allow reviewers to determine if the selected methods are appropriate to obtain the analytical detection limits required to achieve the sensitivity data quality objectives. The quantitation limit goal should be lower than the PAL by an amount determined the DQOs/PQOs.

EPA Comments on redline text added to the Revised PDI WP

EPA reviewed redline text added to the Final PDI WP not directly in response to EPA's September 14, 2020 comments and has the following comments:

1. **Allocation:** EPA's approval of the PDI WP does not pertain to topics which allude to allocation. EPA's review of the PDI WP was focused solely on its remedial design objectives consistent with the ASAOC and should not be considered approval of allocation related discussions included in the document. For example, text in Section 2.6.1.1 (on page 2-12) states that: "Elevated concentrations of chloride in Gravel/Basalt Zone well RP-13-43, which is located on the northern site boundary, indicate a likely offsite source of chloride." Similar discussions of potential NAPL sources are also included in the PDI WP. Consistent with the ASAOC, LSS is responsible for the remedial design to address all contamination within the Arkema Project Area.
2. **Section 1 Introduction, page 1-1:** The project extents were revised to approximately RM 6.90 to 7.57. This is inconsistent with the ASAOC which defines the project area as approximately RM 6.90 to 7.6. Please ensure all future documents reference the project area consistent with the ASAOC.
3. **Section 1.2.2.3 Boiler Room and Fuel Tanks, page 1-6:** The first paragraph on this page states that: "Upon reviewing the results, EPA informed Arkema that the concrete pad could be left in place." A reference for this EPA communication needs to be provided. Additionally, the results for the concrete chip sampling for PCBs from the slab where the fuel AST for the Riley boiler tank was located should be presented, consistent with the discussions of concrete chip PCB sampling results for other upland sites. Please include this information in the Sufficiency Assessment Report.
4. **Section 1.2.2.4 Transformer Pads, page 1-6:** The text should discuss the soil sampling results for the transformer pads for which significant PCB concentrations were detected in the slab chip sampling. Please include this information in the Sufficiency Assessment Report.

5. **Section 1.2.2.5 Bonneville Power Administration Main Substation, page 1-7:** The text should explain why the soil data with PCB concentrations exceeding RALs and PTW thresholds lead to the results of the investigation indicating that “the substation is not a significant potential source of PCBs in sediments.” For example, because of distance from the river or because there is no migration pathway from this soil to the river, etc. Please include this information in the Sufficiency Assessment Report.
6. **Section 2.6.1.2 GS Roofing Property, pages 2-16 through 2-17:** Include maps in the revised Final PDI WP to support the new text discussing the locations of groundwater CUL exceedances at the GS Roofing site. Additionally, the revised Final PDI WP needs to include a discussion of all up to date information from the investigation that was conducted in 2015 through 2016, which included porewater sampling in the river and sampling of new groundwater monitoring wells (see Forensic Environmental Services, Inc. 2016 document). As written, there is no discussion of porewater. This information should be included in the Phase 1 Data Analysis and Review to provide the foundation for the Draft Phase 2 Scope of Work Memorandum.
7. **Section 2.8.2 PHSS Draft Feasibility Study Appendix Hc, page 2-29:** The text in this section discusses the findings of the hydrodynamic and sediment transport model presented in the draft feasibility study (FS). Note that this model was rejected by EPA for several reasons, one of which was its tendency to overpredict deposition. Please ensure all future documents reference EPA’s FS for findings related to the hydrodynamic model.
8. **Section 3 Investigation Elements and Rationale, page 3-2:** The last bullet point states that: “Based on Phase 1 sample results, additional riverbank soil, subsurface sediment chemistry or NAPL investigation, if needed, for improved remedial design boundary delineation.” This additional sampling information should be provided for EPA approval in the Phase 1 Data Analysis and Review.
9. **Section 4.6.3 Visual Observation, page 4-8:** Consistent with EPA’s Riverbank Guidance, the second to the last bullet point needs to include erosional impacts due to tidal changes. Please include the additional text in forthcoming documents.
10. **Appendix A: FSP Section 4.4.1.3 NAPL Stations, Shake Test Protocols, page 4-11:** The contents of the tube should be allowed to equilibrate for longer than 1 minute, preferably 10 minutes.
11. **Appendix B, QAPP Section 2.4.5.6 TAL Metals, page 2-17:** New text in Section 2.4.5.6 lists mercury by method 7470B but the table shows 7470A. Mercury should be analyzed by method 7470B.